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EXAMINER	
LI, SHI K	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 08/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/621,115	EVANGELIDES ET AL.	
	Examiner	Art Unit	
	Shi K. Li	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3-4, 6-8, 11, 35, 37-38, 40-42 and 45 are rejected under 35 U.S.C. 102(e) as being anticipated by Li et al. (U.S. Patent 6,697,577 B1).

Regarding claims 1 and 35, Li et al. teaches in FIG. 7 an optical transmission system. FIG. 7 comprises optical transmitters 706, attenuators (signal processing unit) 724, WDM multiplexer 708, transmission path 704, optical amplifiers along the transmission path and test system including control modules 716 and 718. The transmitter 706 defines first optical interface for accepting incoming optical signal, and second optical interface for connecting to the attenuators. The attenuators and the WDM multiplexer define third interface for communicating with the second interface and fourth interface for coupling to the transmission path.

Regarding claims 3-4 and 37-38, Li et al. teaches in col. 1, lines 35-37 SONET and ATM industry-standard as the first interface.

Regarding claims 6 and 40, Li et al. teaches in FIG. 7 WDM as second optical layer protocol.

Regarding claims 7-8, 11, 41-42 and 45, Li et al. teaches in FIG. 7 optical gain equalization.

3. Claims 1-2, 5-8, 35-36, 39-42 and 45 are rejected under 35 U.S.C. 102(e) as being anticipated by Kasahara (U.S. Patent Application Pub. 2002/0131115 A1).

Regarding claims 1 and 35, Kasahara discloses in FIG. 1 an optical transmission system comprising a plurality of transmission/reception devices 21, 22, ..., 2N, a WDM multiplexer/demultiplexer 2a, optical amplifier 2b (signal processing unit), transmission path 3 and monitoring device (test system of instant claims) 5c. The transmission/reception devices define first optical interface to the transmission devices 11, 12, 1N, and second optical interface to WDM multiplexer/demultiplexer. The WDM multiplexer/demultiplexer and amplifier define third optical interface connecting to the second optical interface, and fourth optical interface to the transmission path. The monitoring device 5c is coupled to optical amplifier 2b for monitoring optical signal quality.

Regarding claims 2 and 36, Kasahara teaches in FIG. 1 bi-directional interfaces.

Regarding claims 5 and 39, Kasahara teaches in paragraph [0018] that the transmission/reception devices interface with Gigabit Ethernet.

Regarding claims 6 and 40, Kasahara teaches in FIG. 1WDM signal for transmission.

Regarding claims 7-8, 11, 41-42 and 45, Kasahara teaches in FIG. 1 an optical gain element (amplifier) 2b.

4. Claims 1-3, 5-8, 11-12, 14-16, 18-20, 22-25, 28, 30-31, 33-37, 39-42, 45-46, 49-50 and 52 are rejected under 35 U.S.C. 102(e) as being anticipated by Ikoma et al. (U.S. Patent 2002/0097460 A1).

Regarding claims 1, 18 and 35, Ikoma et al. teaches in FIG. 8 an optical transmission system comprising a transponder 1-1, optical signal strength adjuster (signal processing unit) 7-3,

wavelength division multiplexer 7-6, wavelength division demultiplexer 7-7, optical amplifiers 7-4 and 7-5, transmission path and monitor system including test signal function in transponder, monitor control units 7-1 and operating system 7-13. The transponders define first interface for connecting to client I/O and second interface for connecting to optical signal strength adjuster. The optical signal strength adjuster, WDM multiplexer/demultiplexer and optical amplifiers define third interface for connecting to the transponders and fourth interface for coupling to the transmission path. The monitor system monitors optical signal quality.

Regarding claim 2, 19 and 36, Ikoma et al. teaches in FIG. 8 bi-directional interfaces.

Regarding claims 3, 5, 20, 22, 37 and 39, Ikoma et al. teaches in paragraph [0002] SONET/SDH and Gigabit Ethernet as client I/O.

Regarding claims 6, 23 and 40, Ikoma et al. teaches in FIG. 8 WDM.

Regarding claims 7-8, 11, 24-25, 28, 41-42 and 45, Ikoma et al. teaches in FIG. 8 optical gain element 7-4 and 7-5, and gain equalization element 7-3.

Regarding claims 12 and 46, Ikoma et al. teaches in FIG. 8 test signal generator within transponder and monitor system.

Regarding claims 14 and 30, Ikoma et al. teaches in FIG. 3 and paragraph [0028] to loop back signal for testing.

Regarding claims 15, 31 and 49, Ikoma et al. teaches in FIG. 3 pseudo-random test signal.

Regarding claims 16 and 50, Ikoma et al. teaches in FIG. 3 selector 2-2 for selectively monitor test signal or data signal.

Regarding claim 33, Ikoma et al. teaches in FIG. 3 to monitor bit error rate.

Regarding claim 34, Ikoma et al. teaches in FIG. 3 to use selector 2-2 for selecting data signal for monitoring.

Regarding claim 52, Ikoma et al. further teaches in FIG. 6 a ring network with a plurality of nodes where each node has functionality similar to terminal station node 5-1 of FIG. 8.

5. Claims 1-4, 18-21 and 35-38 are rejected under 35 U.S.C. 102(e) as being anticipated by Gerstel et al. (U.S. Patent Application Pub. 2004/0165888 A1).

Regarding claims 1, 18 and 35, Gerstel et al. discloses in FIG. 4 an optical transmission system comprising optical line terminal 1, optical line terminal 2 and network 70. Gerstel et al. explains in FIG. 1 structure of optical line terminal, which comprises transponder 4 and multiplexer/demulitplexer 26. The transponder defines first optical interface for connecting to client equipment, and second interface for connecting to multiplexer/demultiplexer. The multiplexer/demultiplexer transforms optical signal from first optical layer protocol to second layer protocol. The multiplexer/demultiplexer directs optical data signal to network, which inherently includes transmission paths. FIG. 1 also includes test pattern injection circuits (TPIC) and monitoring circuit (MC).

Regarding claims 2, 19 and 36, Gerstel et al. teaches in FIG. 1 bi-directional interfaces.

Regarding claims 3-4, 20-21 and 37-38, Gerstel et al. teaches in claim 4 SONET and ATM as client signal.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 9-10 and 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. (U.S. Patent 6,697,577 B1) in view of Trischitta et al. (P. Trischitta et al., "Applying WDM Technology to Undersea Cable Networks", IEEE Communication s Magazine, February 1998).

Li et al. has been discussed above in regard to claims 1, 3-4, 6-8, 11, 35, 37-38, 40-42 and 45. The difference between Li et al. and the claimed invention is that Li et al. does not teach an undersea optical transmission path. Trischitta et al. teaches to apply long-haul WDM transmission technology to undersea applications and discloses in FIG. 2 the Africa ONE project. One of ordinary skill in the art would have been motivated to combine the teaching of Trischitta et al. with the optical transmission system of Li et al. to apply the transmission path of Li et al. for undersea applications because WDM allows undersea networks to use the wavelength layer to add and drop more traffic capacity at more landing points, while keeping the number of fiber pairs in the system to a minimum (see page 63, left col., last paragraph). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use WDM optical transmission network of Li et al. for undersea applications, as taught by Trischitta et al., because WDM allows undersea networks to use the wavelength layer to add and drop more traffic capacity at more landing points, while keeping the number of fiber pairs in the system to a minimum.

8. Claims 9-10, 26-27 and 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikoma et al. (U.S. Patent 2002/0097460 A1) in view of Trischitta et al. (P. Trischitta et al., "Applying WDM Technology to Undersea Cable Networks", IEEE Communication s Magazine, February 1998).

Ikoma et al. has been discussed above in regard to claims 1-3, 5-8, 11-12, 14-16, 18-20, 22-25, 28, 30-31, 33-37, 39-42, 45-46 and 49-50. The difference between Ikoma et al. and the claimed invention is that Ikoma et al. does not teach an undersea optical transmission path. Trischitta et al. teaches to apply long-haul WDM transmission technology to undersea applications and discloses in FIG. 2 the Africa ONE project. One of ordinary skill in the art would have been motivated to combine the teaching of Trischitta et al. with the optical transmission system of Ikoma et al. to apply the transmission path of Ikoma et al. for undersea applications because WDM allows undersea networks to use the wavelength layer to add and drop more traffic capacity at more landing points, while keeping the number of fiber pairs in the system to a minimum (see page 63, left col., last paragraph). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use WDM optical transmission network of Ikoma et al. for undersea applications, as taught by Trischitta et al., because WDM allows undersea networks to use the wavelength layer to add and drop more traffic capacity at more landing points, while keeping the number of fiber pairs in the system to a minimum.

9. Claims 13, 29 and 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikoma et al. (U.S. Patent 2002/0097460 A1) in view of Yu et al. (U.S. Patent Application Pub. 2003/0048508 A1)

Ikoma et al. has been discussed above in regard to claims 1-3, 5-8, 11-12, 14-16, 18-20, 22-25, 28, 30-31, 33-37, 39-42, 45-46 and 49-50. Ikoma et al. teaches in paragraph [0049] to send test data over unused optical channels. The difference between Ikoma et al. and the claimed invention is that Ikoma et al. does not teach to use dummy or spare channels for maintaining

prescribed operation state of optical amplifier. Yu et al. teaches in paragraph [0002] to paragraph [0004] that it is desirable to keep input power to an optical amplifier constant so as to maintain saturation or other performance characteristics of an amplifier. One of ordinary skill in the art would have been motivated to combine the teaching of Yu et al. with the optical transmission system of Ikoma et al. so that spare channels are used for maintaining performance characteristics of an amplifier because this keeps the optical gain of an amplifier constant and avoids fluctuation in signal power for individual channels. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use spare channels for maintaining performance characteristics of optical amplifiers, as taught by Yu et al., and send test signal over these channels in the optical transmission system of Ikoma et al. because this keeps the optical gain of an amplifier constant and avoids fluctuation in signal power for individual channels.

10. Claims 17, 32 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikoma et al. (U.S. Patent 2002/0097460 A1) in view of Ransford et al. (U.S. Patent 6,532,087 B1).

Ikoma et al. has been discussed above in regard to claims 1-3, 5-8, 11-12, 14-16, 18-20, 22-25, 28, 30-31, 33-37, 39-42, 45-46 and 49-50. The difference between Ikoma et al. and the claimed invention is that Ikoma et al. does not teach a Q-monitor. Ransford et al. teaches in col. 1, line 60-col. 2, line 11 relationship between BER and Q-factor. Ransford et al. teaches in FIG. 2 a Q-tester for determining Q-factor and in FIG. 3 to use the Q-tester for monitoring signal quality in transmission system. One of ordinary skill in the art would have been motivated to combine the teaching of Ransford et al. with the optical transmission system of Ikoma et al. to

monitor signal with Q-tester because Q-tester can determine Q-factor in a short period of time while measuring BER takes a long time. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the Q-tester of Ransford et al for monitoring signal quality in the optical transmission system of Ikoma et al. because Q-tester can determine Q-factor, and therefore link performance, in a short period of time.

Response to Arguments

11. Applicant's arguments filed 6 June 2005 have been fully considered but they are not persuasive.

The Applicant states that the Examiner has asserted that a transponder corresponds to the optical transmission terminals set forth in the claims and terminals provide more functionality, and hence require more components, than is simply offered by a transponder. However, the rejections are based on mapping of functionality and services provided by the components. For example, regarding claim 1, Gerstel et al. discloses in FIG. 4 an optical transmission system comprising optical line terminal 1, optical line terminal 2 and network 70. Gerstel et al. explains in FIG. 1 structure of optical line terminal, which comprises transponder 4 and multiplexer/demulitplexer 26. The transponder defines first optical interface for connecting to client equipment, and second interface for connecting to multiplexer/demultiplexer. The multiplexer/demultiplexer transforms optical signal from first optical layer protocol to second layer protocol. The multiplexer/demultiplexer directs optical data signal to network, which inherently includes transmission paths. FIG. 1 also includes test pattern injection circuits (TPIC) and monitoring circuit (MC).

12. Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

skl
18 August 2005

M. R. SEDIGHIAN
PRIMARY EXAMINER